**The Case of the “Mystery Resistor” \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Wet Lab – Inquiry Lab**

You have been hired to find the value of your mystery resistor. Fortunately, you are provided with three clues and a set of tools to investigate the case. The clues are as follows:

* Clue #1: Potential difference = Electric current x Electrical resistance (V = I x R)
* Clue #2: Slope = Rise = y2 – y1

Run x2 – x1

* Clue #3: Change the power supply to get different values for potential difference and electrical current.

**Tools:**

(6) Batteries Ammeter

Switchboard Voltmeter

Mystery Resistor

(5) Wires

**Task #1:** Your task is to design a circuit that allows you to find the value of the mystery resistor. Ensure that you include all work (tables, calculations, graphs, units).

**Task #2:** You have been given a new tool, a lightbulb. Your second task is to design a circuit that allows you to investigate resistance in the lightbulb. Ensure that you include all work (tables, calculations, graphs, units) and answer the following questions in your report.

**Discussion:**

1. What is the resistance of the resistor?
2. Describe the relationship between voltage and current for the resistor.
3. How does this relationship differ for the lightbulb? Is a lightbulb an ohmic resistor? Explain your answer.
4. What can you infer about the resistance of the lightbulb as the current through it increases?

**Conclusion:**

In a short paragraph, summarize three important scientific concepts demonstrated in this lab.